



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/M.Sc. (Genetic)/SEM-4/MSGEN (MBT)-403/2010**

**2010**

**MEDICAL BIOTECHNOLOGY**

Time Allotted : 3 Hours

Full Marks : 70

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

**GROUP – A**

**( Multiple Choice Type Questions )**

1. Choose the correct alternatives for any *ten* of the following :

10 × 1 = 10

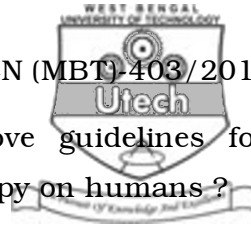
i) Which year is considered to be the advent of the *Age of Biotechnology* after manufacture of a synthetic protein from a recombinant gene for the first time ?

- |         |          |
|---------|----------|
| a) 1974 | b) 1977  |
| c) 1978 | d) 1979. |

ii) In which year did Harvard researchers use Genetic Engineering techniques to produce rat insulin ?

- |         |          |
|---------|----------|
| a) 1976 | b) 1978  |
| c) 1980 | d) 1982. |





- ix) In which year did the NIH approve guidelines for performing experiments in gene therapy on humans ?
- a) 1982                                      b) 1985
- c) 1987                                      d) 1988.
- x) Genentech, Inc. produced the first human protein manufactured in a bacteria
- a) Somatostatin                              b) Insulin
- c) none of these                              d) both of these.
- xi) Trans sexualism is known as
- a) Genetic sex                                      b) Gender sex
- c) Gonadal sex                                      d) Genital sex.
- xii) The genetic material transferred directly into the body of the patient is known as
- a) *ex vivo*                                      b) *in vivo*
- c) *in vitro*                                      d) none of these.

**GROUP – B**

**( Short Answer Type Questions )**

Answer on any *three* of the following.

3 × 5 = 15

2. “Human Genetic Diversity is low”. Explain.
3. Define Cryptic rearrangements of Chromosome with example.
4. How does SRY gene regulate sex of the embryo ?
5. Define the condition of 46, XX Intersex.
6. Define the characteristics of ideal vector.



**GROUP – C**

**( Long Answer Type Questions )**

Answer any *three* of the following.  $3 \times 15 = 45$

7. Define anatomy of human chromosome. What are laboratory *in vitro* methods to study chromosome structure ? Describe the current method of studying chromosomal rearrangement in Genetic syndrome.  $3 + 6 + 6$
8. What is Genetic Sex ? How is sex of the embryo determined by Genotype ? How are internal and external sex organ differentiation controlled by Genotype of embryo ?  $3 + 5 + 7$
9. Define genetic basis of Complex Genetic Disorders. How does it differ from monogenic disorders ? How do Genetic markers help to find alleles or causative gene in complex disorder like coronary artery disease ? What is that evidence that Diabetic type II is genetic ?  $4 + 3 + 4 + 4$
10. Write short notes on Genetic factors in any *five* of the following diseases:  $5 \times 3$ 
  - a) Schizophrenia
  - b) Alzheimer disease
  - c) Beta Thalassaemia
  - d) Diabetes mellitus
  - e) Epilepsies
  - f) Obesity
  - g) Male Infertility.
11. What are Pharmacogenetics and Pharmacogenomics ? What is Genetic Polymorphism ? Explain the molecular basis of Drug Designing.  $2 + 2 + 4 + 7$

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